CBE, Sierra Club, Center, ForestEthics et al. Comments on the Revised Draft Environmental Impact Report for the Phillips 66 Company Rail Spur Extension and Crude Unloading Project

ATTACHMENT C8

Attachments to Expert Report of Phyllis Fox on the Revised Draft Environmental Impact Report for the Phillips 66 Rail Spur Extension and Crude Unloading Project, November 2014.

Oil by Rail Safety in California

Preliminary Findings and Recommendations

A crude oil train travels across the Clear Creek Trestle in Plumas County, California and through the Feather River Canyon on June 5, 2014.

State of California
INTERAGENCY RAIL SAFETY WORKING GROUP

June 10, 2014

I. Introduction

California is on the cusp of dramatic changes in how oil is transported to the state. In 2012, about 70% of oil imported by California refineries came through marine terminals;[1] only one million barrels or 0.3% came by rail.[2] In 2013, crude oil imports by rail jumped 506% to 6.3 million barrels, or approximately 1% of total imports.[3] Many experts, including the California Energy Commission, project that this number could increase by up to 150 million barrels, or 25% of total imports, by 2016. There currently are at least a half dozen planned infrastructure projects statewide that would facilitate greatly expanded oil by rail shipments, either refinery expansions and retrofits allowing for processing of more imported oil, such as from the Bakken shale formation in North Dakota, or expansion of rail terminal facilities.[4] To date, most crude oil by rail has come from Canada and North Dakota.

These trends parallel what has been a sharp increase in oil by rail shipments nationally, especially in response to increases in production of oil from the Bakken shale formation. Oil from the Bakken is high-quality, light, sweet crude, making it more valuable and economically competitive than some of the other domestic crude oils. While moving oil by rail is more expensive than by pipeline ($12/barrel of oil (bbl) versus $6/bbl), it is faster and offers greater flexibility, enabling companies to take advantage of $30/bbl price differentials across the United States. Industry is currently investing heavily in rail infrastructure and rail tank cars; Burlington Northern Santa Fe plans to invest $400 million to expand rail capacity in North Dakota alone.[5] Over the last several years, oil by rail in the United States has increased from 9,500 carloads in 2008 to 434,000 carloads in 2013.[6] (A carload holds about 600 to 700 barrels, or between 25,000 to 30,000 gallons.)[7]

The federal government has primary authority over railroad safety. California, however, enforces federal requirements, as well as state specific rules, and state and local agencies have the lead in the areas of emergency planning, preparedness and response. States additionally can help ensure that federal and voluntary industry actions are adequate given the risks posed by oil by rail. In January 2014, the Governor's Office convened a Rail Safety Working Group to examine safety

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[1] Office of Spill Prevention and Response, "OSPR Statewide Oil Program: Briefing to the Governor's Office," December 19, 2013.

[2] California Energy Commission, "Crude Imports by Rail (2012, 2013, 2014)," Energy Almanac, last modified May 2014, http://energyalmanac.ca.gov/petroleum/statistics/2013_crude_by_rail.html.

[3] Ibid.

[4] These include:

- Bakersfield – Plains All American (under construction): 90 cars per day
- Pittsburg – WesPac Energy Project (planned): 70 cars per day, construction could begin in early 2014 and would reach completion in about 18 months
- Benicia – Valero (planned): 100 cars per day, could be operational by the first quarter of 2015
- Bakersfield – Alon (planned): 200 cars per day
- Wilmington – Valero (planned): 85 cars per day
- Santa Maria – Phillips 66 (planned)

[5] Burlington Northern Santa Fe, "BNSF 2014 Capital Spending Now in Full Swing: $1 Billion Going to Northern Corridor States," May 1, 2014, http://www.bnsf.com/media/news-releases/2014/may/2014-05-01a.html.

[6] Association of American Railroads, "Moving Crude Oil by Rail," December 2013, https://www.aar.org/keyissues/Documents/Background-Papers/Crude-oil-by-rail.pdf.

[7] Association of American Railroads, "Just the Facts – Railroads Safely Move Hazardous Materials, Including Crude Oil," https://www.aar.org/safety/Documents/Just%20the%20Facts%20on%20Hazmat%20and%20Crude%20Oil%20Safety.pdf.

concerns and recommend actions the state and others should take in response to this emerging risk.[8] This report contains a summary of initial recommendations from the Working Group.

II. Scope of the Problem

A. Recent Accidents and Risks of Oil by Rail Transport

As oil by rail shipments have increased in recent years, there has been a dramatic increase in the number of incidents involving crude oil by rail. Nationally, rail incidents rose from several per year prior to 2010 to 155 in 2013, and 90 thus far in 2014.[9] More crude oil by volume was spilled in rail incidents in 2013 than was spilled in the nearly four decades prior.[10] California is experiencing similar trends, albeit on a smaller scale to date. Incidents involving oil by rail in California increased from 3 in 2011 to 25 in 2013; as of May, there have been 24 thus far in 2014.[11] Total petroleum spills by rail in California (crude oil and other) increased from 98 in 2010 to 182 in 2013.[12] Most reported incidents document a relatively small volume of oil released, but as detailed below, the potential for high-consequence incidents will increase as more oil is transported by rail.

Incidents involving crude oil from the Bakken shale formation have been particularly devastating – most notably, the tragic accident in July 2013 in Lac-Mégantic, Quebec, where 63 tank cars of crude oil exploded, killing 47 people.[13]

Lac-Mégantic, Quebec[14]

[8] The Working Group includes representatives from the California Public Utilities Commission, California Office of Emergency Services, California Environmental Protection Agency, Department of Toxic Substances Control, California Energy Commission, California Natural Resources Agency, California Office of the State Fire Marshal, Department of Oil, Gas and Geothermal Resources, and Office of Spill Prevention and Response.
[9] Pipeline and Hazardous Material Administration, "Incident Reports Database Search," Office of Hazardous Materials Safety, June 2014, https://hazmatonline.phmsa.dot.gov/IncidentReportsSearch/search.aspx.
[10] McClatchyDC, "More oil spilled from trains in 2013 than previous 4 decades, federal data show," January 20, 2014, http://www.mcclatchydc.com/2014/01/20/215143/more-oil-spilled-from-trains-in.html.
[11] California Office of Emergency Services, "Historical HazMat Spill Notifications," May 6, 2014, http://www.calema.ca.gov/HazardousMaterials/Pages/Historical-HazMat-Spill-Notifications.aspx.
[12] Ibid.
[13] Congressional Research Service, "U.S. Rail Transportation of Crude Oil: Background and Issues for Congress," May 5, 2014, http://www.fas.org/sgp/crs/misc/R43390.pdf.
[14] The Atlantic, "Freight Train Derails and Explodes in Lac Mégantic, Quebec," July 8, 2013, http://www.theatlantic.com/infocus/2013/07/freight-train-derails-and-explodes-in-lac-megantic-quebec/100548/.

In addition to Lac-Mégantic, there have been eight major accidents in 2013 and 2014 combined:[15]

- **October 19, 2013 – Gainford, Alberta**: No injuries, 100 people evacuated, 13 cars derailed (9 carrying liquefied petroleum gas and 4 carrying Canadian crude oil)
- **November 8, 2013 – Aliceville, Alabama**: No injuries, 30 cars carrying North Dakota crude oil derailed
- **December 30, 2013 – Casselton, North Dakota**: No injuries, 1,400 people evacuated, 34 cars derailed (20 carrying North Dakota crude oil)
- **January 7, 2014 – Plaster Rock, New Brunswick**: No injuries, 17 cars derailed (5 carrying Canadian crude oil)
- **January 20, 2014 – Philadelphia, Pennsylvania**: No injuries, 7 cars derailed (6 carrying Canadian crude oil)
- **February 13, 2014 – Vandergrift, Pennsylvania**: No injuries, 21 cars derailed (19 carrying Canadian crude oil)
- **April 30, 2014 – Lynchburg, Virginia**: No injuries, 15 cars carrying crude oil derailed
- **May 9, 2014 – LaSalle, Colorado**: No injuries, 6 cars carrying crude oil derailed[16]

The causes of these accidents vary and some are still being investigated, but they include track failures, inadequate rail car equipment, and human error (such as leaving cars unattended without proper braking systems). Federal safety experts believe many recent rail car failures are due to the rupture of tank cars containing a pressurized liquid above its boiling point, and are closely examining the potential unique risks posed by transporting oil from the Bakken shale formation. The concern is that the light, gasoline-like nature of the crude oil from Bakken (and other similar shale plays) is inherently more flammable than other crude oil and makes such rail car ruptures more likely, especially given existing tank car standards. Others posit that oil producers are not extracting enough propane (or other natural gas liquids) from Bakken, and similar crude oil, before transport, thereby exacerbating the risk of rupture.

The National Transportation Safety Board (NTSB) has also found numerous deficiencies in the regulation of rail safety. These include that crude oil transported by rail sometimes has been incorrectly characterized and labeled, and not transported with the level of protection mandated for the degree of hazard posed, inadequacies in route planning to avoid population centers and environmentally sensitive areas, and a need for auditing rail carriers to ensure adequate response plans are in place.[17] In addition, a comprehensive recent report by New York found similar weaknesses in the existing regulatory scheme, including: outdated tank cars with insufficient placards, a lack of critical information about the characteristics of crude oil being transported, a

[15] Congressional Research Service, "U.S. Rail Transportation of Crude Oil: Background and Issues for Congress," May 5, 2014, http://www.fas.org/sgp/crs/misc/R43390.pdf.
[16] Huffington Post, "6 Cars Of Crude Oil Train Derail Near LaSalle, Colorado," May 10, 2014, http://www.huffingtonpost.com/2014/05/10/crude-oil-train-colorado_n_5298679.html.
[17] National Transportation Safety Board, "Safety Recommendation R-14-1," January 23, 2014, http://www.ntsb.gov/doclib/recletters/2014/R-14-001-003.pdf.

lack of data about trends in the movement and volume of crude oil, and a need to expand and update federal environmental and contingency response plans.[18]

B. Oil by Rail Routes and Risks in California

In California, trains transporting crude oil are expected to travel via the Feather River or Donner Pass to the Bay Area, the Tehachapi Pass to Bakersfield, or into Los Angeles. As a result, they will travel through some of the state's most densely populated areas, as well as some of the most sensitive ecological areas, since rail lines frequently operate near or over rivers and other sensitive waterways in the state.

Agencies in the Working Group collaborated to identify and map areas along rail routes with potential high vulnerability, and to identify the locations of emergency response teams relative to the vulnerabilities.[19] As seen in the attached map, there are serious risks throughout the state from oil by rail and significant gaps in local emergency response capabilities.

Specifically, the mapping exercise found the following:

- High hazard areas[20] for derailments are primarily located in the mountains, with at least one such site along every rail route into California. Some high hazard areas are also located in more urban areas, such as in the San Bernardino-Riverside and San Luis Obispo regions. Overall, high hazard areas represent an estimated 2% of track and 18% of the derailments that have occurred.[21] This means that 82% of derailments have occurred in a wide range of other locations. The high hazard areas do not reflect the locations of other types of rail accidents (e.g., collisions). Therefore, while the highlighted areas are important, they are not the only sites where accidents may occur.

- Areas of vulnerable natural resources are located throughout the state, including in urban areas. A rail accident almost anywhere in California would place waterways and sensitive ecosystems at risk. The high hazard areas for derailments are generally located in areas with high natural resources vulnerability and nearby waterways (e.g., Dunsmuir, the Feather River Canyon).

- Emergency hazardous material response teams ("hazmat") in California have generally good coverage of urban areas, but none are located near the high hazard areas in rural Northern California. Some areas such as Yuba City and Monterey only contain "Type III Hazmat" teams, units that are equipped to perform only in a support rather than lead role during a major chemical or oil incident.

[18] State of New York, "Transporting Crude Oil in New York State: A Review of Incident Prevention and Response Capacity," April 30, 2014, http://www.governor.ny.gov/assets/documents/CrudeOilReport.pdf.
[19] The map was prepared by OSPR, OES, CPUC, CalEPA, and the California Department of Technology.
[20] "High hazard areas" are areas that were identified in Decision 97-09-045 of the California Public Utilities Commission, and were identified either by a statistically significant high frequency of derailments, or by the existence of restrictive railroad operating rules to address unusually risky operating characteristics such as steep grade and sharp curves. There is considerable overlap between the two identification criteria.
[21] For 2003 to 2013 in areas identified via the statistical method described in the preceding footnote.

Other populated areas near rail routes, such as Stockton, San Luis Obispo, Santa Maria, and Barstow, contain only "Non-Certified Hazmat" teams, which are local teams that have not applied to be certified by the state as meeting certain levels of training and equipment.[22]

- Population centers, schools, and hospitals are frequently located near rail lines in urban areas and in the Central Valley. A highly populated area is located near a major high hazard area for derailments in the San Bernardino-Riverside area.

- Earthquake faults in California are located along rail lines in many areas, especially in urban areas in and around Los Angeles and the Bay Area. A major earthquake could damage tracks and bridges beyond the immediate area of the marked faults.

III. Government Actions to Date

A. Federal

Federal law governs most major aspects of rail transport, and preempts most state regulation. The principal agency responsible for promulgating and enforcing the safety of rail shipments of crude oil is Department of Transportation (DOT), and specifically within DOT: the Federal Railroad Administration (FRA) and the Pipeline and Hazardous Materials Safety Administration (PHMSA).

DOT has responded to the spate of accidents and increased volume of oil by rail with a series of increasingly stringent emergency orders and advisories.[23] Among the most important of the federal actions are the following:

- Requirements for proper testing, characterization, classification and designation of oil shipped by rail
- Investigation of how shippers and carriers are classifying crude oil
- Review of crew staffing levels and operating procedures
- Requirement for updated safety and security plans

[22] Although Non-Certified Hazmat teams are not a part of the formal mutual aid system, they may be fully capable of responding to and mitigating an event.

[23] The actions include:
August 2013 - Operation Classification
August 2, 2013 - Joint FRA-PHMSA Safety Advisory 2013-06
August 7, 2013 - FRA Emergency Order 28
September 6, 2013 - PHMSA Advanced Notice Of Proposed Rulemaking (ANPRM): Rail Petitions and Recommendations to Improve the Safety of Railroad Tank Car Transportation
November 20, 3013 - Joint PHMSA-FRA Safety Advisory 2013-07
January 2, 2014 - PHMSA Safety Alert, Preliminary Guidance from Operation Classification
January 21, 2014 - NTSB Safety Recommendations to FRA and PHMSA
February 21, 2014 - 8-Part Agreement between DOT and the Association of American Railroads
February 25, 2014 - DOT Emergency Restriction/Prohibition Order
March 6, 2014 - DOT Amended and Restated Emergency Restriction/Prohibition Order
May 7, 2014 - DOT Emergency Restriction/Prohibition Order, FRA Safety Advisory 2014-01

- Restrictions on leaving trains unattended
- Requirement for advance notification to State Emergency Response Commissions of weekly shipments of significant volumes of Bakken crude oil by county

PHMSA also has initiated a rulemaking to consider revisions to the regulations governing the transportation of hazardous materials by rail. The changes under consideration include more stringent requirements for the tank cars most typically used to transport Bakken or other crude oil, DOT Specification 111 (DOT-111) tank cars. In addition, earlier this year DOT reached an agreement with the Association of American Railroads (AAR) under which industry agreed to eight voluntary safety measures, including: reduced speed for crude oil trains with older tank cars going through urban areas, analyses to determine the safest routes for crude oil trains, increased track inspections, enhanced braking systems, installation of wayside defective bearing detectors along tracks, better emergency response plans, improved emergency response training, and working with communities through which oil trains move to address community concerns. The voluntary measures go into effect between March and July 2014.

B. California

At the state level, the California Public Utilities Commission (CPUC) shares authority with the federal government to enforce federal rail safety requirements, and also has authority to enforce state safety rules. The CPUC has also been an active participant in federal rulemaking efforts, including through the FRA's Railroad Safety Advisory Committee.

Various state agencies engage in prevention, planning, emergency response, and cleanup activities applicable to oil by rail, including the Office of Emergency Services (OES), the Office of State Fire Marshal (OSFM), California Environmental Protection Agency (CalEPA), and the Office of Spill Prevention and Response (OSPR). These state agencies are all beginning to prepare for the heightened risks posed by oil by rail. Local agencies, including the local Certified Unified Program Agencies (CUPAs), also play critical roles in emergency preparedness and response, and have expressed growing concern about increased oil by rail transport.

Several aspects of the state's emergency response framework are currently being updated: The CalEPA Emergency Response Management Committee is revising the Hazardous Material and Oil Spill annex of the State Emergency Plan, OES is leading an effort to review and update the six Regional Plans for Hazardous Materials Emergency Response, and OES has also re-started meetings of the State Emergency Response Commission (SERC), the federally-mandated state coordinating body for hazardous materials release response planning.

IV. Recommendations

The Working Group's preliminary findings and recommendations are set forth below. In sum, while the federal actions taken to date are significant, they do not go far enough to address the risks of increased oil by rail transport. The state should press both the federal government and the railroad industry to take additional safety measures. Additionally, the state should strengthen its inspection and enforcement resources, remedy significant gaps in its emergency preparedness and response programs, and provide the public with an interactive map showing potential high risk areas from oil by rail traffic.